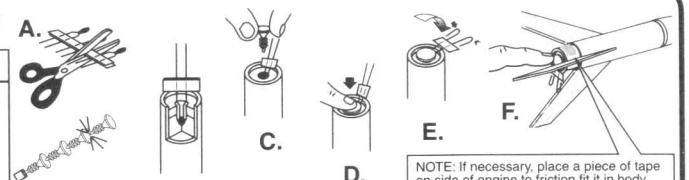
ENGINE PREP

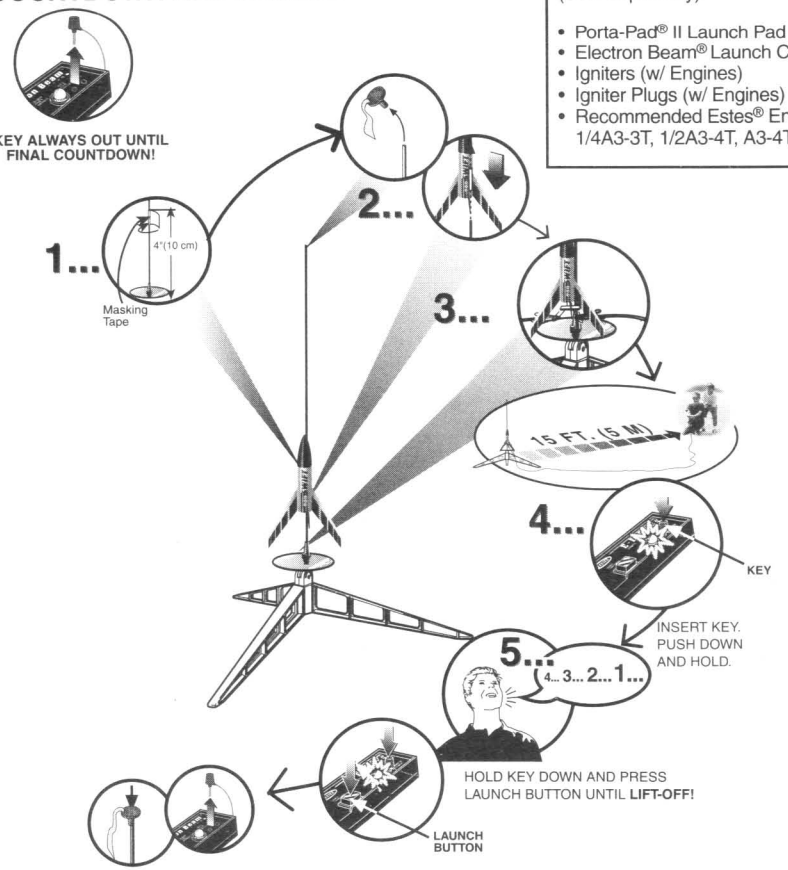
⚠ WARNING: FLAMMABLE

To avoid serious injury, read instructions & NAR Safety Code included with engines.
PREPARE YOUR ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH!
If you do not use your prepared engine, remove the igniter before storing your engine.



NOTE: If necessary, place a piece of tape on side of engine to friction fit it in body. IMPORTANT: Engine must not fit too tightly into rocket. When the engine ejection charge fires, the engine is pushed out of the rocket.

COUNTDOWN AND LAUNCH



LAUNCH SUPPLIES

(Sold Separately):

- Porta-Pad® II Launch Pad
- Electron Beam® Launch Controller
- Igniters (w/ Engines)
- Igniter Plugs (w/ Engines)
- Recommended Estes® Engines: 1/4A3-3T, 1/2A3-4T, A3-4T, A10-3T.

PRECAUTIONS

NAR Safety Code

NO DRY GRASS OR WEEDS

FLYING YOUR ROCKET

Choose a large field (500 ft. [152 m] square) free of dry weeds and brown grass. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great. Launch only with little or no wind and good visibility.
Always follow the National Association of Rocketry (NAR) SAFETY CODE.

MISFIRES

TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET! Take the plug and igniter out of the engine. If the igniter has burned, it worked but did not ignite the engine because it was not touching the propellant inside the engine. Put a new igniter all the way inside the engine without bending it. Push the plug in place. Repeat the steps under Countdown and Launch.

 P/N 60576 (07-03)

ESTES®

www.estesrockets.com

ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240
PRINTED IN CHINA

220 SWIFT™

EST 0810

MINI-ENGINE ROCKET FLYING MODEL ROCKET KIT INSTRUCTIONS

KEEP FOR FUTURE REFERENCE.

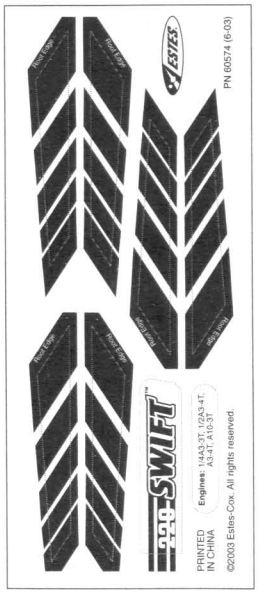
ASSEMBLY TIP:

Read all instructions before beginning work on your model. Make sure you have all parts and supplies.

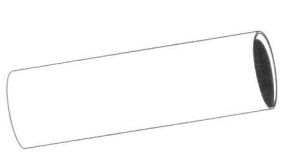
TEST-FIT ALL PARTS TOGETHER BEFORE APPLYING ANY GLUE!
If any parts don't fit properly, sand as required for precision assembly.

PARTS:

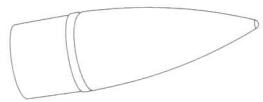
Locate the parts shown below and lay them out on the table in front of you.
DO NOT USE THIS DRAWING TO ASSEMBLE YOUR ROCKET.



Decal Sheet (1) (60574)



Body Tube BT-5 White 1 3/4" (1) (30290)



Plastic Nose Cone (1) (72609)

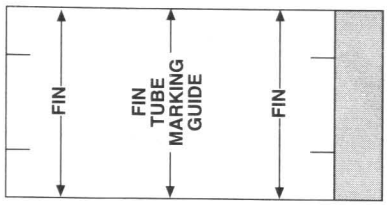
Launch Lug 1/8" x 1 1/4" (1) (38175)

Balsa Strips (2) (32104)

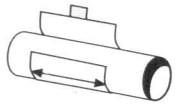
SUPPLIES

In addition to the parts included in the kit you will also need:

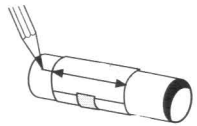
1. MARK BODY TUBE



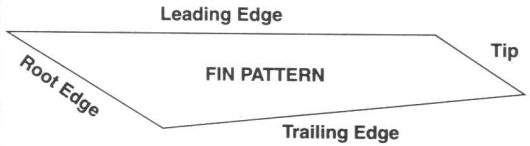
A. Cut out tube marking guide and fin pattern.

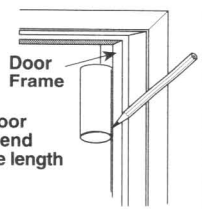


B. Wrap guide around tube and tape.



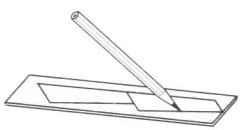
C. Mark tube at arrows, remove guide.



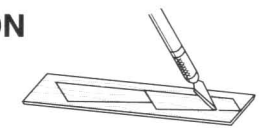


D. Using a door frame, extend lines entire length of tube..

2. FIN PREPARATION



A. Mark balsa strips with fin pattern.

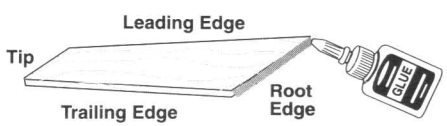


B. Cut out fins, note: there will be four, only three are required.

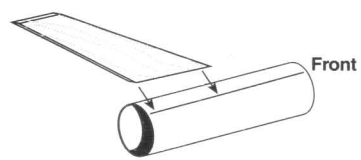
C. Stack together and sand all edges smooth.

3. ATTACH FINS

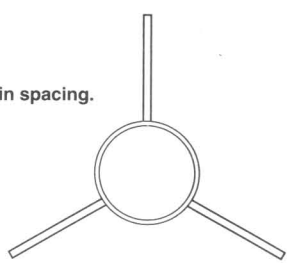
A. Apply thin layer of glue to root edge. Wait 1 minute. Apply 2nd layer.

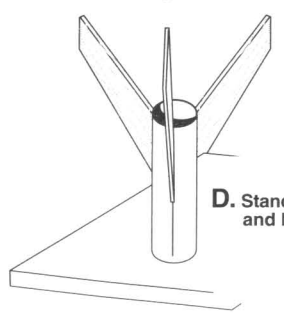


B. Attach to fin line even with end of tube. Let dry. Continue with remaining fins. Let dry.



C. Check fin spacing.

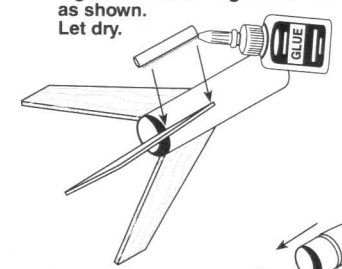




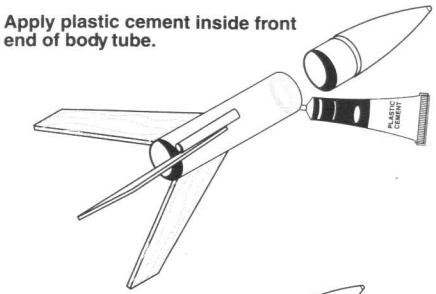
D. Stand rocket on table and let fins dry.

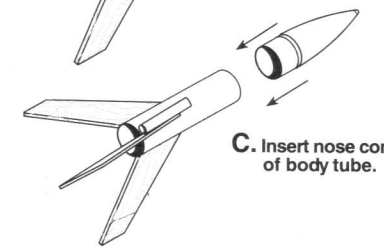
4. ASSEMBLE NOSE CONE & LAUNCH LUG

A. Apply carpenter's glue to launch lug. Place launch lug next to fin as shown. Let dry.

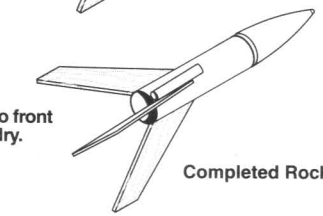


B. Apply plastic cement inside front end of body tube.



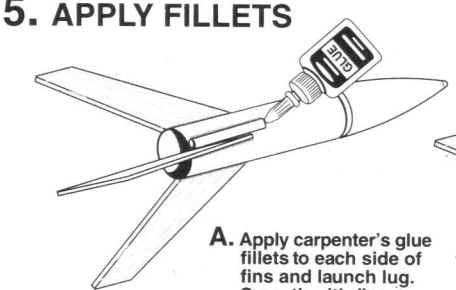


C. Insert nose cone into front of body tube. Let dry.

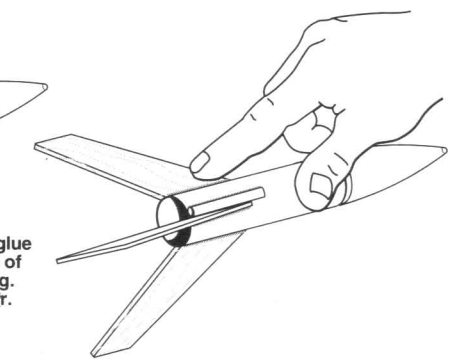


Completed Rocket

5. APPLY FILLETS



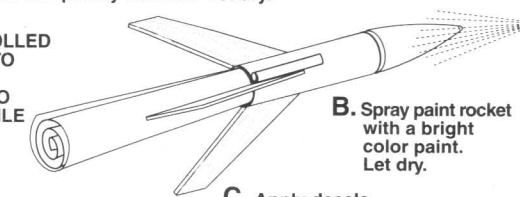
A. Apply carpenter's glue fillets to each side of fins and launch lug. Smooth with finger. Let dry.



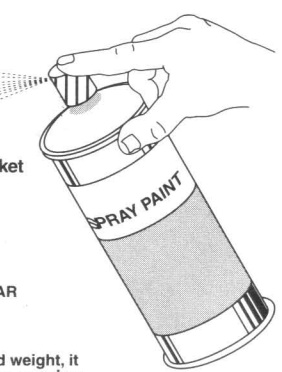
PAINT SCHEME

A. Spray entire model with white primer, sand, spray again until completely smooth. Let dry.

INSERT ROLLED PAPER INTO REAR OF ROCKET TO HOLD WHILE PAINTING.



B. Spray paint rocket with a bright color paint. Let dry.

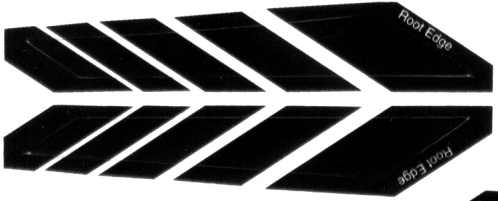


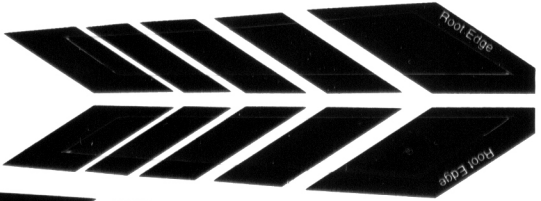
C. Apply decals.

OPTIONAL: AFTER DECAL PLACEMENT, SPRAY ENTIRE ROCKET WITH CLEAR COAT. LET DRY.

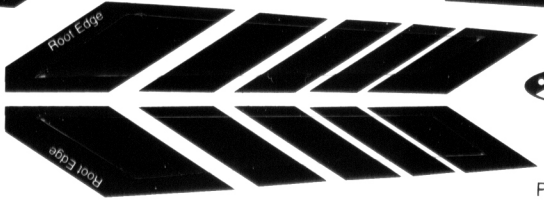
FLIGHT PROFILE

The 220 Swift™ is Estes' smallest and lightest rocket. Because of it's size and weight, it uses Featherweight or Tumble Recovery. The ejection charge ejects the engine, causing a shift in the center of gravity. This allows the rocket and the engine to tumble lightly and safely to the ground.





220 SWIFT™



ESTES

PRINTED IN CHINA

Engines: 1/4A3-3T, 1/2A3-4T, A3-4T, A10-3T

PN 60574 (6-03)

FLYING MODEL

ROCKET™

SKILL LEVEL 1

220 SWIFT™

- Sleek, High Speed Design!
- Lightweight Tumble Recovery!
- Flies to 750 Ft. (229m)!

ONLY 41/2 INCHES TALL

Length: 4.5 in. (11.4 cm)
Diameter: 0.94 in. (24 mm)
Weight: 0.094 oz. (2.7 grams)
Altitude: 750 ft. (229 m)
Recovery: Tumble
Engines: 1/4A3-3T, 1/2A3-4T, A3-4T, A10-3T

Assembly required. Glue, finishing supplies and launch supplies not included.

PN 60575 (06-03)

EST 0810

0 47776 00810 6

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